THE CONSTITUTION OF ATOMS

THE Physical Society of London visited Cambridge, and at a meeting in the Cavendish Laboratory, June 20, Sir J. J. Thomson, the president, gave information of the results of some important experiments he has been making with regard to the production of very soft Röntgen radiation by the impact of positive and slow cathode rays. According to the report in the London *Times* Professor Thomson said he proposed to give them an account of some recent experiments whose object it was to fill up a gap in the kind of radiation that they had at their disposal upon investigation of the properties of the atom. The study of Röntgen radiation had enabled them to prove the existence of two separate rings of electrons, one inside the other; the one was responsible for what is known as the K kind of radiation, and the other had the L characteristic, but the L characteristic was so much softer than the K that if they were to consider what would be likely to be the properties of the radiation given out by a third ring, if the rate of increase in softness was anything like the same proportion the radiation from the third ring would come well within that region of radiation which at present had not been studied, and if they command a continuous series of radiations, extending from the visible light which affected the outer ring of electrons right up to the hardest region of radiation, they would be able to see how many separate vibrating systems, how many rings of electrons there were inside the other, and, more than that, they would be able, by the study of that radiation, to gauge the number of electrons in each ring, so that this study promised to give them the means of determining the distribution of electrons throughout the atom. In the experiments two methods had been employed. The first was the production of Röntgen radiation by the impact of positively charged atoms. By availing himself of the very remarkable sensitiveness of the Schuman photographic plate they had been enabled to get unmistakable evidence that as the positive rays impinged against a surface they gave out a type of Röntgen radiation. Professor Thomson described at length the apparatus he employed, which in this case was a Crookes tube, and the experiments he made. His second method was by the impact of cathode rays, and they arranged the experiment so that they had the speed of the cathode rays very much under control. In this experiment an ordinary Röntgen ray tube was employed. The photographic method, Professor Thomson continued, was rather time wasting, and they had lately tried experimenting with a substitute for the photographic plate, and if they succeeded with those experiments they probably would be able to get on much more quickly. But even with the photographic plate they hoped to make a series of experiments which would enable them to find how many rings of electrons there were in an atom.

HENRY HEMPHILL

WE have just received notice of the death, July 25, at Oakland, Cal., of Henry Hemphill, in his eighty-fifth year.

Mr. Hemphill was born in Wilmington, Del., in 1830, but for many years had been a resident of the state of California. He was a mason by trade and took great pride in his proficiency. More than fifty years ago he became interested in the shells of the Pacific coast and formed one of a group of enthusiastic collectors which included Kellogg the botanist, Harford, Voy, Stearns and others, of which he was the last survivor. His trade brought him in, at California union wages, such a good income that he could not only lay away a fair nest egg for his old age, but take long vacations. During these periods he visited Florida and all parts of the Pacific coast south of British Columbia, and became one of our most expert collectors of mollusks. The genus of slugs, *Hemphillia,* was named in his honor by the late W. G. Binney, and a host of species commemorate in like manner his success as a collector.

He published but few papers himself, but was the cause indirectly of much publication by others. He had a keen eye for relationships and differences, and at times mounted on large tablets series of land shells with radi-

ating lines of variation which were most instructive, and which found a place in some of the most important museums. He had been long a widower, and, as age diminished his energies, he retired to Oakland, where for the last few years he made his home with an only daughter. His kindly ways and generosity to others will keep his memory green among those who knew him. He left what is doubtless the best and most complete collection of Pacific coast shells, up to the time of his retirement, that is to be found anywhere except in the National Museum. It is particularly rich in series showing variation, and in the land shells; also including much valuable exotic material received in exchange. It is to be hoped that this collection may be preserved intact in one of the public institutions of the Pacific coast, as at present a collection of shells worthy of the state of his adoption does not exist in any university or museum west of the Rockies.

Wm. H. Dall

SCIENTIFIC NOTES AND NEWS

On account of the international crisis, the meeting of the American Chemical Society, which was to have been held in Montreal in September, has been indefinitely postponed.

Dr. Max Rubner has been appointed director of the Kaiser Wilhelm Laboratory for Physiology to be erected in Berlin.

Dr. Karl Runge, professor of applied mathematics at Göttingen and several years since visiting professor to Columbia University, has been elected Prorektor of the University of Göttingen.

Dr. Wilhelm Waldeyer, professor of anatomy at Berlin, celebrated the fiftieth anniversary of his doctorate on July 20.

Dr. Alexis Carroll, of the Rockefeller Institute for Medical Research, is reported to have gone to the front as a French army surgeon.

Lord Welby has been elected president of the Royal Statistical Society.

Dr. Severance Burrage, professor of sanitary science in Purdue University, has been elected president of the Indiana Academy of Sciences.

Dr. Mazyck P. Ravenel, who recently resigned the chair of bacteriology in the University of Wisconsin to accept a similar chair in the University of Missouri, has been appointed a member of the advisory board of the hygienic laboratory of the United States Public Health Service, Washington.

Major Thomas L. Rhodes has been transferred to the Panama Canal service, and has been appointed superintendent of the Colon Hospital.

Dr. Oscar Riddle, of the Carnegie Institution, delivered the annual address before the American Academy of Medicine at its Atlantic City meeting on the evening of June 19. His subject was "The Determination of Sex and Its Experimental Control."

"Panama and the Canal" was the subject of an illustrated lecture at the University of Chicago on August 17, by Mr. Frank A. Gause, superintendent of the schools of the Canal Zone.

Professor H. L. Fairchild delivered a lecture on "Ancient Sea Margins in the Hudson and Connecticut Valleys" before the students of geography and geology at the Columbia University summer session on August 12.

The name "Rio Theodoro" has been given by the Brazilian government, at the suggestion of Dr. Müller, Brazilian secretary of state for foreign affairs, to the river recently explored by Mr. Roosevelt's expedition, and heretofore known as the Rio da Duvida.

We learn from *Economic Geology* that the Division of Mines of the Bureau of Science, Philippine government, has recently suffered the loss of Mr. Paul R. Fanning, metallurgist, who is now metallurgist for a zinc company, and Mr. Frank T. Eddingfield, mining engineer, who has reurned to Washington. Mr. Wallace E. Pratt, geologist, has returned from six weeks' reconnaissance work in the Caramoan Peninsula, southeastern Luzon, where there exists a very interesting area of schistose rocks. He also made an examination of an iron deposit on a small island in the mouth of